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CHANGE

PRACTICE

Chronic vertigo: treat with exercise, not drugs

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Chronic vertigo is a challenging problem. Currently patients are generally treated in general practice with betahistine (off-label use), while stronger evidence exists for the effectiveness of vestibular rehabilitation.

Vertigo is the most common type of dizziness.¹ Each year around 1 in 20 people in the general population experiences vertigo.² Around 80% of these people affected by vertigo find that it severely impairs their daily functioning.² Since the symptoms of vertigo prevent many people from working, as well as resulting in an increase in the risk of falling and a high use of healthcare services, vertigo also represents a substantial economic cost.²

Most cases of vertigo are caused by peripheral vestibular disorders such as vestibular neuritis, benign paroxysmal positional vertigo, vestibular migraine, and Ménière's disease.² Initial treatment varies, depending on the most likely vestibular disorder. Box 1 provides an overview of specific treatments for the most common peripheral vestibular disorders.

All peripheral vestibular disorders have a distinct natural course with a substantial chance of developing chronic vertigo⁴: 30–40% of patients with vestibular neuritis still experience vertigo after six months, and 50% of patients will have experienced recurrence of benign paroxysmal positional vertigo by 3–5 years after initial diagnosis.^{2–4} Vertigo is defined as a false sensation that the body or environment is moving.¹⁵ Acute vertigo concerns well defined, isolated spells with a distinct onset and offset, whereas chronic vertigo is defined as a continuous sensation or recurrent attacks of vertigo.¹⁶ Although a clear definition of duration is lacking,¹⁵ chronic vertigo is often defined as symptoms persisting for more than one month (based on the clinical course of vestibular disorders¹⁷ and expert opinion¹⁸).

Peripheral vestibular disorders induce an important innate repair mechanism known as vestibular compensation, which aids functional recovery after damage to the vestibular system.¹⁹ However, there is a large inter-individual variation in the rate and level of recovery.¹⁹ Chronic vertigo occurs when natural vestibular compensation fails.¹⁹ Vestibular rehabilitation (see box 2) is now considered the preferred treatment for patients with chronic vertigo^{1–22} and is recommended by US,^{8–23} Dutch,¹⁸ and UK²⁴ clinical practice guidelines. In spite of this guidance, anti-vertigo drugs such as betahistine (see box 3) are commonly prescribed, and vestibular rehabilitation is hardly used to treat chronic vertigo. An observational study of patients with vertigo from 13 different European countries (4294 participants) found that betahistine was prescribed to more than two thirds of patients with vertigo in general practice at first consultation and was still being used six months later.²⁵ In contrast, surveys of general practitioners in the Netherlands (n=426)³¹ and UK (n=53)³² found that only 5.8–6.8% used vestibular rehabilitation. Recent Cochrane reviews showed moderate quality evidence for the effectiveness of vestibular rehabilitation and weak evidence for the effectiveness of betahistine to treat chronic vertigo.^{7–33} There is therefore a need to address the discrepancy between current clinical practice and current evidence in the treatment of chronic vertigo.

The evidence for change

There is moderate quality evidence, partly from general practice studies, that vestibular rehabilitation is a safe and effective treatment for chronic vertigo (see table 1).¹ There is low quality evidence, conducted in secondary and tertiary care populations, that patients with chronic vertigo experience a benefit from betahistine treatment compared with placebo (table 1).¹

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Change articles aim to alert clinicians to the immediate need for a change in practice to make it consistent with current evidence. The series advisers are Sera Tort, clinical editor, and David Tovey, editor in chief, the Cochrane Library. We welcome any suggestions for future articles (email us at practice@bmj.com).

What you need to know

- Patients with vertigo should first be treated with any specific treatment for the underlying vestibular disease
- Vestibular rehabilitation is a form of exercise therapy designed to optimise the process of vestibular compensation that is disrupted in patients with chronic vertigo
- Patients with chronic vertigo who do not respond to disease-specific treatments should be offered vestibular rehabilitation instead of anti-vertigo drugs

Box 1: Specific treatments for the most common peripheral vestibular disorders*Vestibular neuronitis*

- There is no known curative treatment for vestibular neuronitis; evidence for the effectiveness of treatment with corticosteroids is insufficient³
- Symptomatic treatment with vestibular suppressant medications (anticholinergics, antihistamines, and benzodiazepines) and antiemetics can be given in the acute phase of vestibular neuronitis.⁴ However, these drugs should not be prescribed for longer than three days^{5,6} because they can be counterproductive due to suppression of vestibular compensation⁴
- Vestibular rehabilitation is indicated if the patient experiences chronic vertigo⁷

Benign paroxysmal positional vertigo (BPPV)

- Patients suspected of posterior canal BPPV should be treated initially with a canalith repositioning manoeuvre called the Epley manoeuvre.⁷⁻⁹ The optimal number of Epley manoeuvres is still unclear, but repetition has a beneficial effect when nystagmus persists after the first treatment¹⁰
- Vestibular rehabilitation is indicated when patients with chronic vertigo are unwilling or unable to undergo an Epley manoeuvre or experience persisting disability after the Epley manoeuvre^{7,8}

Vestibular migraine

- Evidence for disease-specific treatment is limited.¹¹⁻¹³ Guidelines for the diagnosis of vestibular migraine have only recently been established, and no intervention trials with well defined patient groups have yet been conducted. There is no well established drug that can prevent vestibular migraine attacks¹²
- Familiar therapies for migraine attacks such as triptans and antiemetics can be considered, but their use is mostly based on expert opinion.^{11,13} Patients with vestibular migraine were not included in the 2015 Cochrane review of vestibular rehabilitation⁷
- Based on weak evidence, vestibular rehabilitation is advised when patients experience persistent vertigo symptoms between migraine attacks¹¹

Ménière's disease

- Patients suspected of Ménière's diseases should be referred to a ENT specialist for diagnosis and treatment
- Vestibular rehabilitation is not indicated for acute vertigo attacks in Ménière's disease, but should be offered to patients who develop persisting vertigo symptoms^{7,14}

Box 2: Vestibular rehabilitation

Vestibular rehabilitation is an exercise based treatment consisting of varied eye, head, and body movements designed to stimulate the vestibular system and optimise vestibular compensation.⁷ The treatment is suited for all patients with vestibular dysfunction who are able to complete a daily, low intensity exercise programme for 6-12 weeks.^{7,21}

Box 3: Betahistidine

The most prescribed anti-vertigo drug is betahistidine.^{25,26} It is estimated that more than 130 million patients have taken betahistidine since its launch in 1968.²⁷ This is surprising, since betahistidine has no FDA approval in the US due to insufficient efficacy²⁸ and is only registered for the relatively rare Ménière's disease in other countries.^{26,30} This discrepancy can be explained by excessive off-label use. A Canadian observational study (50 823 patients) found off-label prescribing in 91.5% of all betahistidine prescriptions.³⁰ Off-label prescriptions are considered "ill founded" when prescribing is not advised by clinical practice guidelines or pharmacotherapeutic handbooks. A Dutch observational study (319 843 participants) found that 26.4% of all betahistidine prescriptions were ill founded off-label.²⁶

Sources and selection criteria

We searched Medline, PubMed, and the Cochrane Database of Systematic Reviews to identify randomised controlled trials and systematic reviews that assessed the safety and effectiveness of vestibular rehabilitation and betahistidine in the treatment of chronic vertigo. We found two recent Cochrane reviews that investigated the effectiveness of vestibular rehabilitation (2015)⁷ and betahistidine (2016).³³ The BEMED trial³⁵ and an online vestibular rehabilitation trial³⁷ were the only relevant randomised controlled trials identified that were not already included in these Cochrane reviews.

We searched clinicaltrials.gov and WHO ICTRP and identified one relevant ongoing clinical randomised controlled trial. In this trial, online vestibular rehabilitation, with and without guidance, is compared with usual care.³⁸ At the moment there are no ongoing randomised controlled trials for betahistidine in the treatment of chronic vertigo.

Effectiveness of vestibular rehabilitation

A Cochrane review updated in 2015 (39 randomised controlled trials, 2441 participants) compared vestibular rehabilitation for unilateral peripheral vestibular dysfunction with sham exercises or no intervention.⁷ Participants experienced vestibular dysfunction from a variety of causes including vestibular neuritis, benign paroxysmal positional vertigo, late stage

Ménière's disease with a non-fluctuating vestibular deficit, or a combination of peripheral vestibular disorders. Because of heterogeneity in study design, not all studies could be pooled. In a pooled analysis of four studies in which all patients experienced chronic vertigo, patients assigned to vestibular rehabilitation reported higher subjective improvement in vertigo (odds ratio 2.67 (95% confidence interval 1.85 to 3.86), 565

participants). There were no reported adverse effects in any of the 39 randomised controlled trials. Three high quality trials (589 patients) were conducted in a general practice population.²⁰⁻²²

We applied the GRADE methodology and judged the overall quality of evidence as moderate. We deemed the risk of bias serious, since over a third of studies in the review were rated as having a high risk of bias. There was no serious inconsistency, indirectness, imprecision, or publication bias. We can summarise that, based on moderate to high quality randomised controlled trials, there is moderate evidence that vestibular rehabilitation is a safe and effective treatment for chronic vertigo.⁷

Effectiveness of betahistine

Betahistine was originally developed for Ménière's disease, and early trials were targeted at these patients. A Cochrane review (last updated 2011, 7 randomised controlled trials, 243 patients) that compared betahistine with placebo in patients with Ménière's disease concluded there was insufficient evidence to say whether betahistine has any effect on Ménière's disease.³⁴ Recently, a randomised, placebo controlled trial investigated vertigo symptoms in 211 patients with Ménière's disease and found no statistically significant benefit for betahistine over placebo.³⁵

The effectiveness of betahistine for symptoms of vertigo (including 14 trials with patients with chronic vertigo and 3 trials with a mix of acute and chronic vertigo patients) was examined in a Cochrane review in 2016 (17 randomised controlled trials (including 5 unpublished industry studies), 1025 patients).³³ Participants had varied neurotological diagnoses, including Ménière's disease, benign paroxysmal positional vertigo, and vertigo of unknown origin. In a pooled analysis with patients all experiencing chronic vertigo, a statistically significant improvement in vertigo symptoms was seen in the betahistine group compared with the placebo group (risk ratio 1.30 (95% CI 1.05 to 1.60), 606 participants, 11 studies). Nearly all included trials had a high risk of bias with poor reporting of methods and outcome measures. In contrast to vestibular rehabilitation, none of these trials was conducted in a general practice population, which limits the applicability of these results for general practice.

Consequences of current clinical practice

Betahistine leads to substantial healthcare costs. Stopping off-label use of betahistine in the UK alone would save over £4 000 000 a year.²⁹ Since evidence for the most registered indication (Ménière's disease) is also insufficient, costs could be decreased even further by completely stopping betahistine prescriptions. By choosing betahistine, doctors deny other treatments to patients that have better established evidence of effectiveness. Different causes of peripheral vestibular disease, such as benign paroxysmal positional vertigo and Ménière's disease, have a specific preferred treatment (see box 1). When chronic vertigo develops after such disease-specific treatments, vestibular rehabilitation should be prescribed by general practitioners.

Barriers to change

The most important barrier to general practitioners using vestibular rehabilitation is that they do not know how to perform the treatment. Most patients surveyed prefer exercise based treatment over anti-vertigo drugs.

There is limited evidence on the factors that contribute to the current mismatch between scientific evidence and clinical practice in the treatment of chronic vertigo. We conducted a survey among 426 Dutch general practitioners about the use of vestibular rehabilitation.³¹ The main reason for not applying vestibular rehabilitation was that general practitioners did not know how to perform the technique (92.4%).³¹ Other reasons were that it was too time consuming (7.2%), general practitioners had doubts about its effectiveness (6.3%), and it was not recommended in national guidelines (4.5%). Perceived patient pressure is a key reason that general practitioners prescribe drugs, even though this perception often does not match the patients' real expectations.³⁶ The Dutch College of General Practitioners conducted a focus group meeting (see box 4). Patients preferred exercise based treatment over anti-vertigo drugs, but most were offered only drug therapy by their general practitioner. Since betahistine is generally well tolerated, prescribing this drug could be considered an easy fix for a difficult complaint. Compared with a straightforward prescription of betahistine, vestibular rehabilitation may be seen by general practitioners as a difficult and time consuming treatment.

How should we change our practice?

Offer patients with vertigo disease-specific treatments (box 1). Plan a follow-up consultation if symptoms do not resolve after disease-specific treatment (see box 1). Evaluate the effect of treatment to ascertain whether the patient has developed chronic vertigo. Chronic vertigo is present if symptoms persist for more than a month. There is no place for betahistine or any other anti-vertigo drugs in the treatment of chronic vertigo: stop all anti-vertigo drugs that the patient is using for acute vertigo (see box 1 for indications) and offer vestibular rehabilitation to all patients with chronic vertigo.

In a recently published trial an online vestibular rehabilitation intervention was shown to be effective and well liked by patients with chronic vertigo.³⁷ Such newly developed self help methods of vestibular rehabilitation (internet based³⁷ or booklet based²²) help general practitioners to treat patients with vestibular rehabilitation. For patients who need more support, offer referral to physiotherapists or audiologists for extra guidance.

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Box 4: How patients were involved in the creation of this article

The Dutch College of General Practitioners conducted a focus group meeting with 10 patients with vertigo in 2016 as part of the revision of the Dutch guidelines on dizziness (in which ORM is involved). Most of these patients had experienced vertigo symptoms for more than three months. Patients' ages ranged from 43 to 80 years, eight were women, and disorders represented included benign paroxysmal positional vertigo, vestibular neuronitis, and vertigo of unknown origin. These patients had consulted their general practitioner in the previous year with vertigo complaints, usually chronic.

The aim of the focus group was to gain insight into the patients' perspectives on vertigo treatments. According to the patients, treatment should provide them with a sense of control over their vertigo symptoms. This was one of the reasons why all patients strongly appreciated exercise based treatment. Even though none of the patients explicitly requested drug treatment, several patients were offered betahistine by their general practitioner. Patients did not like taking anti-vertigo drugs. Some never even took the prescribed betahistine because they were afraid of side effects. Only one patient received vestibular rehabilitation. This patient experienced a reduction in vertigo symptoms and was very enthusiastic about the treatment. All patients concurred that general practitioners should at least know of the existence of vestibular rehabilitation.

These perspectives on treating vertigo inspired us to write this article. We consulted a patient with chronic vertigo after writing this manuscript to see if we correctly voiced the patients' opinion. She confirmed that she, and other chronic vertigo patients generally prefer exercise based treatment over drug therapy.

Education into practice

- Do you know how to apply vestibular rehabilitation to treat patients with chronic vertigo?
- Do you know where to find self help educational materials on vestibular rehabilitation to give to patients?

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Table

Table 1 | Summary of evidence for the treatment of chronic vertigo

Study design	Participants	Intervention	Comparator	Results	Anticipated absolute effects (95% CI)	NNT*	Summary of quality of evidence
Vestibular rehabilitation							
Systematic review and meta-analysis (4 randomised controlled trials) ⁷	565 adults with different causes of chronic vertigo (vestibular neuronitis, non-fluctuating Ménière's disease, benign paroxysmal positional vertigo, undefined vertigo)	Vestibular rehabilitation	Sham or no intervention	Vertigo symptoms reduced with vestibular rehabilitation, odds ratio 2.67 (95% CI 1.85 to 3.86).	For every 1000 patients, 225 (135 to 317) more will improve with vestibular rehabilitation than with control	5	Moderate quality evidence†
Betahistine							
Systematic review and meta-analysis (11 randomised controlled trials) ³³	606 adults with different causes of chronic vertigo (Ménière's disease, benign paroxysmal positional vertigo, undefined vertigo)	Betahistine in varying doses	Placebo	Vertigo symptoms reduced with betahistine, risk ratio 1.30 (95% CI 1.05 to 1.60).	For every 1000 patients, 140 (23 to 277) more will improve with betahistine than with control	8	Low quality evidence†

*Number needed to treat

†Evidence judged by GRADE methodology